

JURY TRIAL DEMANDED

1

few scientific discoveries. To accomplish their objectives, the conspiracy group have committed several violations of the US Constitution and the US Codes. The committed violations includes: conspiracy, theft of properties, unreasonable search and seizures, falsification of the official documents, etc.

PARTIES

2. Plaintiff Ali Amiri, is an individual who resides, and at all times relevant to this Complaint did reside in Alabama.

3. Defendant Arunava Gupta, Associate Director of the Center for Material for Information Technology (MINT), is a resident of Alabama. He is sued in both official and individual capacities.

4. Defendant Nian X. Sun, Director of the Advanced Materials and Microsystems Laboratory (AMML) in the Northeastern University, is a resident of Massachusetts. He is sued in his individual capacity.

5. Defendant Takao Suzuki, Director of the MINT center, is a resident of Alabama. He is sued in both official and individual capacities.

6. Defendant Patrick R. LeClair, Chair of the Department of Physics and Astronomy, is a resident of Alabama. He is sued in both official and individual capacities.

7. Defendant The Board of Trustees of The University of Alabama (the “University”) is, upon information and belief, officials who are responsible for the policy and governance of The University of Alabama.

JURISDICTION AND VENUE

8. This Court has subject matter jurisdiction over this cause of action pursuant to 28 U.S.C. § 1331. Also, federal jurisdiction exist pursuant to 42 U.S.C. § 1985(3) and 42 U.S.C. § 1983.

9. The federal jurisdiction, also arises from “unreasonable search and seizures” in violation with the Fourth Amendment, seizures of private properties in violation with the Fifth Amendment.

10. The venue is proper pursuant to 28 U.S.C. § 1391. The plaintiff and four defendants reside in the state of Alabama. All of the events, or occurrences which gave rise to Plaintiff’s claims took place in this Judicial District.

STATEMENT OF FACTS

11. The Plaintiff, Ali Amiri started a PhD program in physics at the University of Alabama in August 2011. Mr. Amiri already had a Master degree in applied physics. His master thesis was about experimental characterization of the magnetic memory devices.

12. In February 2013, Mr. Amiri started his dissertation research at the Center for Materials for Information Technology (MINT). His research advisor was Dr. Arunava Gupta. The research continued until June 2017.

13. As a part of his dissertation research, Mr. Amiri proposed a research toward a new type of memory technology. He did preliminary experiments on this research on spring and summer 2013.

14. In August 2013, Dr. Arunava Gupta was trying to connect with more advanced research centers to collaborate on this research. On August 15, 2013, Dr. Arunava Gupta initiated a collaboration with Dr. Nian X. Sun. A member of Dr. Sun research group, Mr. Tianxiang Nan was introduced to get more details about the research, and start collaboration. See page 22 for the email communication.

15. In August 2014, Dr. Nian X. Sun published an article in the journal SCIENTIFIC REPORTS. See page 23 for the first page of the article. The article is based on the work of Mr. Amiri.

16. Dr. Nian X. Sun and Mr. Tianxiang Nan were trying to repeat the work of Mr. Amiri. They did not tell Mr. Amiri that they are trying to repeat those experiments in their own lab. They were unable to repeat the whole experiment. They published the parts that they were able to repeat.

17. Dr. Nian X. Sun and Mr. Tianxiang Nan were not able to produce vanadium dioxide (VO_2) films. So they reported on (VO_x), admitting their failure in

making good quality films in the paper. Dr. Nian X. Sun did not acknowledge Mr. Amiri in the paper. He did not get any permission for public disclosure of these research findings.

18. The paper publication disclosed the finding of the research originally proposed and conducted by Mr. Amiri. The paper was premature and destroyed the originality of a novel research.

19. Dr. Nian X. Sun and Mr. Tianxiang Nan did not have any other publications about vanadium dioxide before this publication. Also, they did not publish any other paper on this topic after this publication.

20. Dr. Arunava Gupta has been working on the IBM T.J Watson Research Center from 1985 to 2003. His final position was Research Manager for Magnetic Random Access Memory processing and testing.

21. On February 2, 2016, the International Business Machines Corporation (IBM) was awarded the patent No. 9251884. (See page 24 for the first page of this patent). The patent was filed on March 24, 2014, and it is for a nonvolatile memory storage device.

22. This patent contains the finding of the research proposed and conducted by Mr. Amiri on spring and summer 2013. It contains similar information that was transferred to Dr. Nian X.Sun and was presented at his paper.

23. In the IBM patent, there are some generalization as it is usual in patent publications. The vanadium dioxide is generalized as piezoresistive (PR) material. The device design is a simple generalization of Mr. Amiri's initial design.

24. Mr. Amiri successfully defended his research plan in March 2015. (See page 25 for a design of a memory device from this research plan). The submission of this design predates the publication of the IBM patent by about one year.

25. Dr. Arunava Gupta did not get any permission from Mr. Amiri to share these device designs and research information with his previous colleagues in IBM. Independent discovery of the exact same technology by IBM researchers, just few months after Mr. Amiri, is almost impossible.

26. The IBM patent No. 9251884 was made with Government support under contract No.: N66001-11-C-4109 awarded by Defense Advanced Research Projects Agency (DARPA).

27. The original invention by Mr. Amiri, which was unlawfully published by Dr. Nian X. Sun, and patented by IBM, had at least, two main deficiencies. These two deficiencies have made the IBM patent impractical, and hence no device was made based on this patent. Mr. Amiri has continued working in these deficiencies, until he was able to discover scientific solutions for all of these deficiencies. In summer 2016, Mr. Amiri finalized a practical design for a non-volatile memory device based on piezoelectric materials.

28. In fall 2015, Mr. Amiri had enough credentials to graduate from PhD program. He asked from his advisor Dr. Arunava Gupta to let him defend his dissertation and graduate. Dr. Arunava Gupta disagreed, stating that more research needs to be done.

29. Mr. Amiri had weekly meetings with Dr. Gupta starting from spring 2013 to discuss the progress in the research. In October 2014, Dr. Patrick LeClair was invited to attend the meetings and participate in some electronic circuit designs for experiments. The weekly meetings between three people was continued until April 2017. To have some theoretical discussions, a theoretical professor, Dr. Sanjoy Sarker was invited to attend some of the meetings during 2016.

30. In fall 2016, Mr. Amiri was trying to determine the ownership of his inventions and get patent protection for the inventions regarding the memory device. But Dr. Arunava Gupta and Dr. Patrick LeClair refused to undergo the formal disclosure process in accordance with the University's Patent Policy. Furthermore, they limited Mr. Amiri's access to some of the instruments.

31. In October 2016, Mr. Amiri contacted the Associated Dean of the college of Art and Science, Dr. Luoheng Han, to discuss the problem and find a solution through the Dean's Office. In the initial meeting with Mr. Amiri, Dr. Luoheng Han accepted to talk to Both Dr. Arunava Gupta and Dr. Patrick LeClair individually, and come up with a solution through the college of Art and Science.

Dr. Luoheng Han talked to Dr. Patrick LeClair, and trusted his statements. Then he refused to talk to Dr. Arunava Gupta. Also, Dr. Luoheng Han refused to let the Dean's office investigate the problem further.

32. Mr. Amiri contacted the University of Alabama Office for Technology Transfer (OTT) starting in January 2017 to discuss possible patent protection for his invention. At least three meetings was done with the Director and Associate Director of the OTT, on February, March and April 2017. In spite of continuous meetings and discussions there was no procedure to compel the faculty members to follow the Patent Policy of the University.

33. On March 10, 2017, Mr. Amiri had a meeting with three professors: Dr. Arunava Gupta, Dr. Patrick LeClair and Dr. Sanjoy Sarker. One of the subjects was to solve the issues regarding the ownership of the intellectual property for the memory device.

34. Mr. Amiri told: "I am trying to design a device based on the strain effect on VO₂ ..., If I make a patent on that, will you have intellectual property claim on that?" Dr. Arunava Gupta refused to give an answer to the question stating that: "... patent is very different from publication,... ours is different...".

35. In the same meeting, Mr. Amiri raised the question regard patent again. Dr. Arunava Gupta told: "I have several patents, I know how patenting works. OK?"

We have to discuss it separately whether something is patentable or not....” And he refused to tell whether he has intellectual property claim or not.

36. In the same meeting, and for the third time, Mr. Amiri inquired about the intellectual property ownership of the memory device, asking Dr. Gupta: “do you claim any intellectual property if I get it (memory device) to the industry?” in this time Dr. Patrick LeClair told “I am going to talk to students, talk to the parents, a kid in an astronomy class who died. I don’t have time for intellectual property. So, if it is not about science I am going to leave.” Mr. Amiri replied “OK, that is fine.” Then Dr. Gupta told “I have to leave also” and both Dr. LeClair and Dr. Gupta walked out of the meeting, without giving any answer regard their intellectual property claims on the memory device.

37. The audio file of the above mentioned meeting exists. And the quotes are transcribed from the audio file. The audio file was sent to the President of the University Dr. Stuart Bell and the Provost Dr. Kevin Whitaker on July 6, 2017 to provide them with accurate information regarding the issues.

38. On April 21, 2017, Mr. Amiri reported a research misconduct to the Vice President Carl Pinkert. See pages 26 to 33 for seven email communications. The emails contains information regarding the memory device.

39. Dr. Pinkert started a research misconduct investigation in April 2017, the investigation continued on May, June and July. The investigation includes, along

with other misconducts, the transfer of research data conducted by Mr. Amiri about the memory device from the Center for Material for Information Technology (MINT) by its Associate Director Arunava Gupta to the Director of the Advanced Materials and Microsystems Laboratory (AMML), Dr. Nian X. Sun.

40. On June 17, 2017, Mr. Amiri realized that somebody have entered into CVD lab, and has manipulated the research samples. There was some very important samples in the desiccator that were crucial to prove the new scientific discoveries. It seemed that the intruder was not able to find the desired samples amongst few hundred other samples. No other student had the key to the CVD lab, the only other person having the key was Dr. Arunava Gupta. Due to the importance of the matter, the situation was reported to the President Bell. (see page 34 for the email communication)

41. The misconduct investigation was intense, and some influential people including Dr. Takao Suzuki and Dr. Patrick LeClair were trying to stop the investigation by any means possible. On Friday June 23, 2017, Dr. Pinkert informed Mr. Amiri that a formal update regard research misconduct will be announced sometime next week. See page 35 for the email which was sent at 2:16 pm.

42. On the next official day, on the morning of Monday June 26, 2017, an unlawful armed police operation was conducted by the University police department. The armed police officers attacked the resident of Mr. Amiri. The

operation was claimed to be based on a document created by the MINT Director Takao Suzuki. The police officers did not have any court order or search warrant.

43. The police officers demanded and received 10 keys for the labs, and they told to Mr. Amiri: “I want to give you a verbal warning: Not to go back to the building or either of those offices in the premises. Now, as of today do not go back to the MINT center. Don’t even go within the facility”.

44. Mr. Amiri told to police officers that: “I am requesting you to give the keys to the office of President Bell, because there is an investigation against the vice director of the MINT center, and he is trying to plagiarize and steal my intellectual property, and my articles. So, here I am asking you to give it to the highest authority in the university that is President Bell”.

45. Mr. Amiri, also, told to police officers that: “I have a desiccator that is a plastic container. It is in the CVD room. I am asking you to send an Officer to stand guard in front of that. Because there are very important samples in that desiccator. My advisor is trying to destroy those samples. Those samples are very important for the future of the science and technology. I will communicate it with the Federal Government and the State Government. And possibly some people from there will come. I am asking you as the police officers to protect those samples. And please communicate these with your highest authorities [in the police department]

that: you need to protect those samples.” The police officer replied: “I will communicate it, I will deliver the message”.

46. On June 30, 2017, another unlawful police operation was conducted by the university police department. A police officer told: “under theses circumstances you have been requested to leave”.

47. The conversations with the police officers in both police operations on June 26 and June 30, 2017 were recorded with the permission from the police officers. And the quotes are transcribed from the audio files.

48. Due to the multiple armed police operations, the different parts of the University get out of the control of the President’s Office. To find a way out, and regain the control of the situation, Associate Provost and Dean of the Graduate School Dr. Susan Carvalho, gave a readmission offer in another program of the University to Mr. Amiri. (See page 36).

49. The Associate Provost’s letter claims that “The Graduate School received notification from the Department of Physics that you have been dismissed from the Doctor of Science in the Physics program”. The date of the letter is June 29, 2018. The internal communications between the Department of Physics and the Graduate School was after the report of the sample manipulation by an intruder to the President Bell on June, 17, 2017. (See statement 40).

50. No due process for dismissal was done. And Mr. Amiri did not have any hearing with this regard. Mr. Amiri did not receive any letter or email from the Department of Physics that he was dismissed.

51. In June 2017, Dr. Patrick LeClair has entered to the computer system of the Department of Physics, and falsified the Academic Transcript of Mr. Amiri. He has increased the GPA hours from 44 to 50. Such a change in the system has decreased the GPA from 3.932 to 3.460 in the official transcript.

52. In July 2017, Vice President Carl Pinkert stopped the investigation on the illegal technology transfer. Mr. Amiri has requested a copy of the investigation several times. But a copy of the investigation report was not provided.

53. Vice President Carl Pinkert stepped down from vice presidency on the December 31, 2017. Currently Dr. John Higginbotham is the Interim Vice President for Research and Economic Development, and the University is searching to find a replacement since October 2017.

54. On June 1, 2017, Mr. Amiri had an email communication with the President Stuart Bell regarding the ownership of the memory device. (See pages 37 to 39 for the email communication).

55. Finally, in July 2017, Mr. Amiri hired an Intellectual Property attorney, Mr. George Kobler, to take a legal action to get the ownership documents for the memory device. (See pages 40, 41).

56. The university did the Triage Assessment. The market value of the invention was estimated by the University experts to be about few billion dollars. The University prepared the PowerPoint presentation for the Triage Assessment. (See page 42 for a PowerPoint slide of the Triage Assessment). Finally, on August 7, 2017, the ownership of the memory device was released to Mr. Amiri. (See Doc.1, pages 14-17). Vice President Carl A. Pinkert signed the “AGREEMENT FOR RELEASE OF INVENTION RIGHTS” on behalf of the University of Alabama.

57. Mr. Amiri filed two patents for the memory device, before US Patent and Trademark Office, in September 2017. The Application numbers are 62556065, and 62559608. (See Doc.1, page 18)

58. In late September, Dr. Arunava Gupta (in collaboration with the other members of the conspiracy group) broke the locker of Mr. Amiri and stole 8 notebooks, about 200 pages of designs and calculations, and two flash memories.

59. The theft was immediately reported to the FBI. On October 4, 2017, a complete report of the incident was submitted to the FBI Birmingham headquarters. FBI officer, Mr. Joshua Alford contacted the University, and later on, had a couple of phone conversations with Mr. Amiri in this regard, but no progress was made.

60. On November 2, 2017, Mr. Amiri wrote a letter to FBI director, Mr. Christopher Wray. And submitted it through FBI Tuscaloosa Headquarters. (See page 43 for the letter)

61. Officer Jason Esslinger from Tuscaloosa Headquarters contacted the University and also talked to the Officer Joshua Alford. Then he had a phone conversation with Mr. Amiri. Officer Jason Esslinger stated that the case is being considered as a civil case and can be followed through the court system.

62. Mr. Amiri did not get his properties back as of yet. The FBI did not provide information whether they have discovered the stolen properties or not. The FBI confirmed that they have investigated the case. And they are interested to get any other information in this regard. But they told they cannot reveal any information regard their investigation. They told that filing a lawsuit is not being considered against the US national security, and Mr. Amiri can do that.

63. On January 2017, Mr. Amiri filed the third patent (Application Number: 62614996). The patent includes the secret trades of the memory device. Since the secret trades regard the memory device was stolen. He had to disclose the secret trades and get legal protection for them as a patent. The financial damage of this disclosure is substantial.

64. The secret trades of the memory device, are a few fundamental scientific discoveries. These scientific discoveries were very unlikely to be discovered in the next few decades by other scientists. So, Mr. Amiri was intended to be keep them as secret trades for a few years, until he establish the new computer

technology without the hassle of the competitors. As of today, the only people who are aware of these discoveries are:

- a. Mr. Amiri, (He is the inventor)
- b. US Patent and Trademark Office to the extent that Mr. Amiri has disclosed in the third patent,
- c. The members of the conspiracy group who have access to the stolen notebooks and papers, to the extent of their scientific ability to understand from the stolen notes and calculations.

65. Mr. Amiri will disclose some of the scientific discoveries for the public benefit, without getting a patent protection. These include almost all of the discoveries that will not influence the new computer technology in a direct way. These discoveries should have an important effect on the advancement of the science and technology.

66. Mr. Amiri has reached the US Congress to get the stolen properties back, possibly without legal action. But they did not succeed to compel the University of Alabama to return the stolen items.

67. Congressman Robert Aderholt from the United States House of Representatives have tried to resolve the issue. His office had formal communication with President Bell in this regard. Also, an inquiry from FBI was done by Mr. Paul Housel regard these issues.

68. The office of Senator Richard Shelby have done some investigations on this matter. Few other Senators including Senator Mitch McConnell and Senator Chuck Schumer was provided with adequate information.

69. In February 2018, Mr. Amiri retained a Law firm (Sydney Cook Associates, LLC) to do the pre-litigation. Attorney Sydney Cook sent a demand letter to the University of Alabama on February 9, 2018, requesting a meeting time to discuss the situation. (See Doc.1 page 12). The University refused to schedule a meeting time with Attorney Sydney Cook.

70. On February 15, 2018, Attorney Sydney Cook sent a letter to the Chief University Counsel Mr. Michael Spearing, requesting a copy of the report on the Pinkert Investigation for the Technology Transfer from the MINT center by its Associate Director Arunava Gupta to the Director of AMML in northeastern University, Dr. Nian X. Sun. (See Doc.1, page 13). Chief University Counsel Mr. Michael Spearing did not provide the requested report.

71. Vice President Carl Pinkert, who did an investigation about research misconducts, stepped down on December 31, 2017.

72. Associate Dean Dr. Luoheng Han, who refused to investigate the misconducts through the college of Art and Science, is promoted to Associate Provost for Academic Affairs.

COUNT ONE

Conspiracy to interfere with civil rights

42 U.S.C. § 1985(3)

(Defendants Arunava Gupta, Nian X. Sun, Takao Suzuki, and Patrick LeClair)

73. The four above mentioned individual defendants have had a conspiracy to steal the intellectual properties of Mr. Amiri. Especially they decided to get the latest findings of the research conducted by Mr. Amiri by illegal means. And they acted based on their decisions.

74. Dr. Takao Suzuki and Dr. Patrick LeClair supported Dr. Arunava Gupta by using their official possibilities. Such a support enabled Dr. Arunava Gupta to continue his unlawful actions for an extended period of time without much obstacles or resistance from the higher authorities. Dr. Patrick LeClair gave false information to Associate Dean Dr. Luoheng Han, preventing further investigation and possibly solving the problems through the college of Art and Science, as it stated in the statement 31.

75. Dr. Nian X. Sun has received the data regarding the results of the experiments, designed and conducted by Mr. Amiri in a continuous basis since August 2013. He came to the MINT center in October 2017, just one month after the theft of the notebooks and papers of Mr. Amiri. More information about the objectives of this trip will be revealed in the discovery process.

COUNT TWO

Violation of the Fourth Amendment

76. The Armed police operations on June 26, 2017 and June 30, 2017 was in violation with the Fourth Amendment. The police officers did not have any court order or any search warrant.

77. The police officers admitted that they have entered to the apartment without the permission of the owner. And their statement was recorded with their permission in an audio file.

78. The plaintiff respectfully requests the court to order the University Police Department to train and instruct their officers to respect the privacy of the people, and do not apply unnecessary forces, especially while they are armed with weapons. And provide the court with a proof of such a trainings.

COUNT THREE

Violation of the Fourteenth Amendment 42 U.S.C. § 1983

79. The plaintiff has the right to study in the university and get graduated based on the rules and procedures. The University of Alabama has deprived the plaintiff from his rights without providing any reason. The dismissal from the program was done without a due process.

80. The Plaintiff has the right to establish a business and exploit his intellectual properties and patents. The University of Alabama did not issue the ownership documents until the Plaintiff hired an attorney to take the legal action. Even after issuing the IP release after a couple of years of delay, the University has stolen and kept the notebooks and other properties of the plaintiff, preventing him to establish his business for the memory device.

COUNT FOUR

Falsifying official documents

(Defendants Takao Suzuki and Patrick LeClair)

81. Dr. Patrick LeClair falsified the official transcript of the Plaintiff as it is stated in the statement No. 51.

82. Dr. Takao Suzuki signed a false document stating that Dr. Patrick LeClair was the advisor. While Dr. Suzuki knows that the advisor was Dr. Arunava Gupta and not Dr. Patrick LeClair. This Document was referenced in the police operations. And practically stopped the technology transfer investigations by Vice President Carl Pinkert.

RELIEF

WHEREFORE, Plaintiff respectfully requests the following reliefs:

- a) Order the defendants to return all of the stolen properties including 8 notebooks, 200 pages of designs and calculations, and two flash memories.
- b) Order the University of Alabama to immediately issue my PhD
- c) Compensatory damages of 500 million dollars to compensate the damages of the disclosure of the secret trades through the third patent.
- d) Compensatory and punitive damages for delaying my graduation for about 3 years.

Respectfully submitted

Ali Amiri 4/11/2018

Ali Amiri

Help with piezoelectric poling information

Inbox x

**Arun Gupta** <agupta@mint.ua.edu>

8/15/13



to Ziyao, Nian, me ▾

Hi Ziyao,

Hope you are doing well and making good progress in your research work. We are working on growth of magnetic LiFeSO₈ films on piezoelectric substrates and will send you some samples for magnetoelectric measurements when the films are optimized.

On a separate note, I have a student Ali Amiri who is working on VO₂ growth on piezoelectric substrates (PMN-PT, PZN-PT) to investigate the influence of strain on the metal-insulator transition. He is trying to learn about methods for poling of the substrate after film deposition. I would appreciate if you can provide him information regarding poling and experimental setup for the same.

Thanks,
Arun

Dr. Arunava Gupta
Center for Materials for Information Technology
2007 Bevil Building, Box 870209
University of Alabama, Tuscaloosa, AL 35487
phone: 205-348-3822, fax: 205-348-2346

Ziyao Zhou Hi, Arun Thanks for asking and everything goes good here! We will do the ... 8/15/13

Arun Gupta Thanks Ziyao! Ali, please follow up with Tianxiang regarding the details. F... 8/15/13

Sun, Nian <n.sun@neu.edu>

8/15/13



to Arun, Ziyao, Tianxiang, me ▾

Hi Arun,

Glad to see your email, hope things go well with you. I will ask Tianxiang and Ziyao to work with Ali on the collaboration, while we will be copied with the progress.

Thanks,

Nian.

From: Arun Gupta [mailto:agupta@mint.ua.edu]
Sent: Thursday, August 15, 2013 12:20 PM
To: Ziyao Zhou
Cc: Sun, Nian; 'aamiri1@crimson.ua.edu'
Subject: Help with piezoelectric poling information



OPEN

SUBJECT AREAS:

PHASE TRANSITIONS
AND CRITICAL
PHENOMENAELECTRONIC PROPERTIES AND
MATERIALSFERROELECTRICS AND
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8 April 2014Accepted
11 July 2014Published
4 August 2014Correspondence and
requests for materials
should be addressed to
M.L. (mingliu@mail.
xjtu.edu.cn)

Voltage Control of Metal-insulator Transition and Non-volatile Ferroelastic Switching of Resistance in $\text{VO}_x/\text{PMN-PT}$ Heterostructures

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The central challenge in realizing electronics based on strongly correlated electronic states, or 'Mottronics', lies in finding an energy efficient way to switch between the distinct collective phases with a control voltage in a reversible and reproducible manner. In this work, we demonstrate that a voltage-impulse-induced ferroelastic domain switching in the (011)-oriented $0.71\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3\text{-}0.29\text{PbTiO}_3$ (PMN-PT) substrates allows a robust non-volatile tuning of the metal-insulator transition in the VO_x films deposited onto them. In such a $\text{VO}_x/\text{PMN-PT}$ heterostructure, the unique two-step electric polarization switching covers up to 90% of the entire poled area and contributes to a homogeneous in-plane anisotropic biaxial strain, which, in turn, enables the lattice changes and results in the suppression of metal-insulator transition in the mechanically coupled VO_x films by 6 K with a resistance change up to 40% over a broad range of temperature. These findings provide a framework for realizing in situ and non-volatile tuning of strain-sensitive order parameters in strongly correlated materials, and demonstrate great potentials in delivering reconfigurable, compactable, and energy-efficient electronic devices.

Electronics based on strongly correlated materials or 'Mottronics' have shown a wide range of fascinating phenomena, such as the metal-insulator transition (MIT)^{1–6}. The non-volatile voltage control of the conductivity in such materials is one of the most promising schemes for realizing energy-efficient electronic devices^{7–13}. In these materials, electron-electron interactions have a dominant influence on the material properties, and result in the coexistence of multiple phases and inhomogeneous domains on the nanometer scale^{8,14}. Small changes in the structure and charge density near a transition between competing phases can tip the balance among them and eliminate the domain inhomogeneity, leading to large changes in the electronic properties^{4,9,15–17}. Making use of these effects in device applications requires the ability to switch between the distinct electronic states with a control voltage in a stable and reversible manner^{14,18}. Devices based upon such transitions could be, in principle, both fast and energy efficient, thus overcoming some of the intrinsic limitations in conventional field-effect transistors and also providing new functionalities. As one of the most fascinating oxide materials, vanadium dioxide (VO_2) has been known for decades, and is of great interest because it undergoes upon cooling a first-order temperature-driven metal-insulator transition at $T_C^0 = 341\text{K}$ with an abrupt increase in resistivity by several orders of magnitude⁶. This transition is accompanied by a symmetry-lowering structural transition from the tetragonal phase (metallic) to the monoclinic phase (insulating)^{7,19,20}. Upon cooling through the MIT, the tetragonal c -axis expands up to 1%. On the other hand, along the a -axis and b -axis, the lattice shrinks by 0.6 and 0.1%, respectively. Therefore, this Mott transition is inherently associated with the structural changes and the lattice strain via strong coupling among the lattice, charge, spin and orbital degrees of freedom of electrons.

Recently, strain-engineered lattice tuning and ionic liquid gating of the metal-insulator transition in epitaxial VO_2 thin films and free-standing single crystal VO_2 beams have been reported^{7,9,15,21}. In the latter, the electrochemical effects can play a very important role, which results in oxygen migration and vacancy in the VO_2 films. This is beyond the scope of this work. In the former, with the assistance of in-plane biaxial stress imposed from the



US009251884B2

(12) **United States Patent**
Elmegreen et al.

(10) **Patent No.:** **US 9,251,884 B2**
(45) **Date of Patent:** **Feb. 2, 2016**

(54) **NON-VOLATILE, PIEZOELECTRONIC MEMORY BASED ON PIEZORESISTIVE STRAIN PRODUCED BY PIEZOELECTRIC REMANENCE**

(71) Applicant: **International Business Machines Corporation, Armonk, NY (US)**

(72) Inventors: **Bruce G. Elmegreen**, Goldens Bridge, NY (US); **Glenn J. Martyna**, Croton on Hudson, NY (US); **Dennis M. News**, Yorktown Heights, NY (US); **Alejandro G. Schrott**, New York, NY (US)

(73) Assignee: **International Business Machines Corporation, Armonk, NY (US)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 23 days.

(21) Appl. No.: **14/222,813**

(22) Filed: **Mar. 24, 2014**

(65) **Prior Publication Data**
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(51) **Int. Cl.**
G11C 11/22 (2006.01)
G11C 13/00 (2006.01)

(52) **U.S. CL**
CPC **G11C 11/22** (2013.01); **G11C 13/00** (2013.01); **G11C 13/0002** (2013.01); **G11C 13/0004** (2013.01); **G11C 2013/0095** (2013.01)

(58) **Field of Classification Search**
CPC **G11C 11/22**; **G11C 13/00**; **G11C 2013/0095**; **G11C 13/0002**; **G11C 13/0004**; **H01L 45/06**
USPC **365/157**, **163**, **189.011**
See application file for complete search history.

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(Continued)

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D. Balma, et al., "High Piezoelectric Longitudinal Coefficients in Sol-gel PZT Thin Film Multilayers," Journal of the American Ceramic Society, 2013, pp. 1-31.

(Continued)

Primary Examiner — Richard Elms

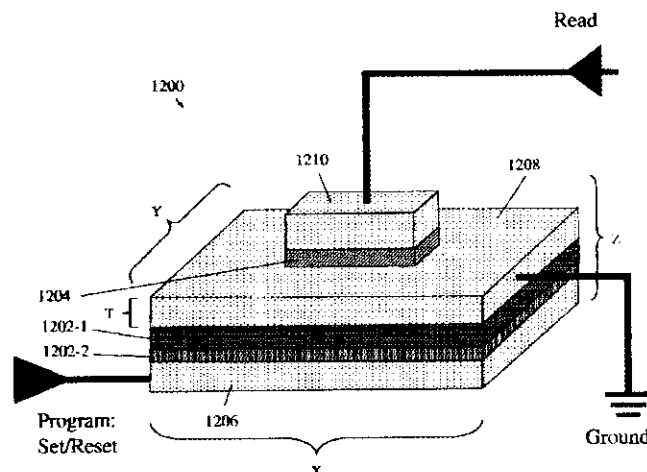
Assistant Examiner — Xiaochun L. Chen

(74) *Attorney, Agent, or Firm* — Cantor Colburn LLP; Vazken Alexanian

(57) **ABSTRACT**

A nonvolatile memory storage device includes a ferroelectric (FE) material coupled with a piezoresistive (PR) material through an inherent piezoelectric response of the FE material, wherein an electrical resistance of the PR material is dependent on a compressive stress applied thereto, the compressive stress caused by a remanent strain of the FE material resulting from a polarization of the FE material, such that a polarized state of the FE material results in a first resistance value of the PR material, and a depolarized state of the FE material results in a second resistance value of the PR material.

8 Claims, 16 Drawing Sheets



Third experiment: Perpendicular device with 2 order of magnitude change in resistivity

In this experiment, I am going to propose a device with two order of magnitude change in resistance. Although it may seem ambitious, with the microstructure of our films it should be possible. FIG.25. shows a schematic of this design.

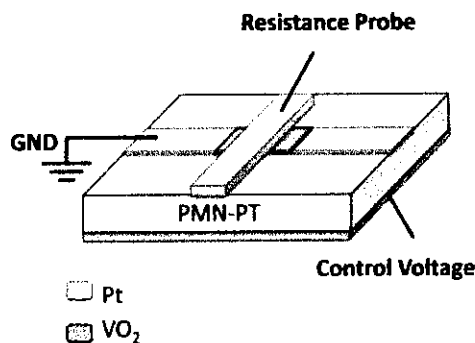


FIG.26. Schematic of the perpendicular device

By applying a proper voltage pulse, two strain states are possible. In the relaxed state, the VO₂ film is an insulator. In the strained state, the grains in the (001) direction will become conductor and will short the remaining grains which are in insulating state. The change in the resistance of the mentioned grains will be of 3-4 orders of magnitude. But the total resistance change should be about two orders of magnitude.

Application: This device can be used in nonvolatile memories. Since the state of the system changes almost without any energy consumption, it may revolutionize the memory devices industry.

Other plans: We can do tunneling studies of excitations in VO₂, which needs very thin films. We can also study the current distribution being potentially non-uniform in metallic state.



Ali Amiri <aamiri1@crimson.ua.edu>

Convincing of Dr. Gupta

Ali Amiri <aamiri1@crimson.ua.edu>

Fri, Apr 21, 2017 at 12:51 PM

To: Takao Suzuki <takaosuzuki@mint.ua.edu>

Cc: Arun Gupta <agupta@mint.ua.edu>, Patrick LeClair <patrick.leclair@gmail.com>

Dear Dr. Suzuki,

In the past 5 months, we have tried to convince Dr. Gupta to let me continue my research on VO2 and to use the PLD system. I do have training in this system, and I have used it to deposit Pt thin films before

We have weekly group meetings with Dr. Gupta, Dr. LeClair and sometimes two other faculty members who are occasionally attending our group meetings. In these meetings, Dr. Gupta asked me to convince him and then use the PLD system. In the next meeting I have presented my reasons to use PLD system, Dr. Gupta has confirmed most of my ideas and then told: "But I am not convinced".

Later on, he told me he has an open mind and I can try more! So I tried more! After some unsuccessful attempts, finally, I asked him what the meaning of convincing is? And he did not provide any kind of definition. So, on the next weekly meeting, I have defined two kind of convincing, which in brief was something like:

Scientific convincing: presenting scientific reasons to prove the necessity and feasibility of an experiment. Which I think I have presented scientific reasons on the necessity of the experiment. And even I have predicted the novel results we will get, based on the known facts and present knowledge of the subject matter.

Procedural convincing: the reasonable and legal process of conducting experiments without violating research and academic ethics. In this part, since I have training on this device and I have used it before, and since I have a clear idea of what I am doing, and it is necessary for my research. I should have access to instrument even without scientific convincing.

Dr. Gupta did not comment on these two type of convincing. But he told he has an open mind and he has not convinced yet.

"The convincing" has taken a very long time and a lot of energy. And it has damaged my career profoundly. I think the whole procedure is illegal. This damage extends to a huge financial damage as well.

Dr. Gupta can be against my idea for memory device, but he cannot destroy my intellectual property. Another problem is that he may leak my information to competing industries (as it has happened before). Which must be stopped by the university administrations.

I claim full ownership of my intellectual property in the memory device. And any leakage of my research data is illegal. Also any damage to the instruments (PLD system, etc.) which results in a delay of my experiments must be strongly prohibited.

I hold Dr. Gupta, MINT center, and The University of Alabama responsible for these academic misconducts and the financial damages of it.

Please let us have a meeting today, and be clear about what is going on. Further delay will definitely damage my career and will affect the success of my memory device. This is against the rules. So please be responsible, and make this issue a priority.

Regards,

--

Ali Amiri
Doctoral Candidate
Center for Materials for Information Technology
Department of Physics and Astronomy
University of Alabama



Ali Amiri <aamiri1@crimson.ua.edu>

Convincing of Dr. Gupta

Takao Suzuki <TakaoSuzuki@mint.ua.edu>

Fri, Apr 21, 2017 at 1:26 PM

To: Ali Amiri <aamiri1@crimson.ua.edu>

Cc: Arun Gupta <agupta@mint.ua.edu>, Patrick Leclair Google <patrick.leclair@gmail.com>

Hi, Ali:

Thanks for this e-mail, writing your problem with your supervisor(s).

I am always happy to listen to and discuss with any students, so that I be able to provide my advice and support if I can. However, for this, one must always respect to each other, including a schedule. As I have already some commitments this afternoon, including MINT Seminar, a meeting with my students for InterMag conference in Dublin next week, I will be very tight this afternoon including my own business matters, so I will leaving over this weekend. (One of my student who will do his oral presentation, and is also working on the manuscript after the referees comments, so this is very urgent, and is a high priority matter for us.)

Here is my advice for you. I am happy to listen and discuss upon my coming back a week after the next week, so please be advised to schedule if you and others be fine. My preference is after May 3(W).

Hope you understand my saying and best,

Takao

From: Ali Amiri [mailto:aamiri1@crimson.ua.edu]

Sent: Friday, April 21, 2017 12:52 PM

To: Takao Suzuki <TakaoSuzuki@mint.ua.edu>

Cc: Arun Gupta <agupta@mint.ua.edu>; Patrick Leclair Google <patrick.leclair@gmail.com>

Subject: Convincing of Dr. Gupta

[Quoted text hidden]



Ali Amiri <aamiri1@crimson.ua.edu>

Convincing of Dr. Gupta

Ali Amiri <aamiri1@crimson.ua.edu>

Fri, Apr 21, 2017 at 2:05 PM

To: cap@ua.edu, Takao Suzuki <TakaoSuzuki@mint.ua.edu>

Cc: Arun Gupta <agupta@mint.ua.edu>, Patrick Leclair Google <patrick.leclair@gmail.com>

Dr. Suzuki,

I have reported this academic misconduct to you more than a month ago. You were reluctant to see me due to IP issues, but after few weeks I requested again, and finally, we had a meeting more than 3 weeks ago. May I respectfully ask: what has been done up to now with this regard?

Please notice that I am not asking for your advice. (Although it is very much valuable for me!) , You are the DIRECTOR of the MINT center. And a very illegal act is going on under your administration. I have reported this to you and I have expected an administrative action.

Since the University of Alabama is also responsible, I am copying Dr. Carl Pinkert, (Vice President for Research and Economic Development) to this email.

Regards,

[Quoted text hidden]



Ali Amiri <aamiri1@crimson.ua.edu>

Convincing of Dr. Gupta

Takao Suzuki <TakaoSuzuki@mint.ua.edu>

Fri, Apr 21, 2017 at 3:20 PM

To: Ali Amiri <aamiri1@crimson.ua.edu>

Cc: Arun Gupta <agupta@mint.ua.edu>, Patrick Leclair Google <patrick.leclair@gmail.com>, "cap@ua.edu" <cap@ua.edu>

Hi, Ali:

Thanks for this.

I have already contacted on 4/18(T) with HR department.

(Needless to say, this is a very sensitive matter, it is always very important to proceed, as we faculty and staff are being advised to do so.)

Please let me know if any question you may have and I am always happy to listen and advice.

Best,

Takao

From: Ali Amiri [mailto:aamiri1@crimson.ua.edu]

Sent: Friday, April 21, 2017 2:06 PM

To: cap@ua.edu; Takao Suzuki <TakaoSuzuki@mint.ua.edu>

Cc: Arun Gupta <agupta@mint.ua.edu>; Patrick Leclair Google <patrick.leclair@gmail.com>

Subject: Re: Convincing of Dr. Gupta

[Quoted text hidden]



Ali Amiri <aamiri1@crimson.ua.edu>

Convincing of Dr. Gupta

Pinkert, Carl <cap@ua.edu>

Fri, Apr 21, 2017 at 8:32 PM

To: Ali Amiri <aamiri1@crimson.ua.edu>

Cc: Carpentato Myles <cmyles@research.ua.edu>

Ali Amiri, What you've alluded to is something we take very seriously. There is a formal process for research misconduct and Ms. Tanta Myles will be in contact with you to formally initiate the initial fact finding that is required.

Lastly, as to IP - if it was done at UA or with UA resources - there may be other institutional (and possibly sponsor) rights that will also be explored in the process.

Carl A. Pinkert, PhD | Vice President

Research & Economic Development

The University of Alabama
201 Rose Administration
Box 870117
Tuscaloosa, AL 35487
Phone 205-348-4566
cap@ua.edu | <https://www.ua.edu/research/>

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Ali Amiri <aamiri1@crimson.ua.edu>

Convincing of Dr. Gupta

Pinkert, Carl <cap@ua.edu>

Fri, Apr 21, 2017 at 8:34 PM

To: T Suzuki <takaosuzuki@mint.ua.edu>

Cc: Ali Amiri <aamiri1@crimson.ua.edu>, "Gupta, Arunava" <agupta@mint.ua.edu>, Patrick Leclair Google <patrick.leclair@gmail.com>, Carpantato Myles <cmyles@research.ua.edu>

HR would not be the appropriate first step here. Tanta Myles would be responsible for evaluating and coordinating a research misconduct evaluation. She had been informed of the accusations.

-cap

Carl A. Pinkert, PhD | Vice President

Research & Economic Development

The University of Alabama

201 Rose Administration

Box 870117

Tuscaloosa, AL 35487

Phone 205-343-4566

cap@ua.edu | <https://www.ua.edu/research/>

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[Quoted text hidden]



Ali Amiri <aamiri1@crimson.ua.edu>

Convincing of Dr. Gupta

Ali Amiri <aamiri1@crimson.ua.edu>

Sun, Apr 23, 2017 at 5:09 PM

To: "Pinkert, Carl" <cap@ua.edu>

Cc: Carpentato Myles <cmyles@research.ua.edu>

Dear Dr. Pinkert,

I am so grateful that you have heard my voice. For more than two years, I have reported these misconducts to higher authorities step by step! And I did not get any practical result, but sympathy!

I have contacted Ms. Tanta Myles to initiate a fact finding process.

Regards IP: we need to get this memory device to industry in about 2-3 months or so. This will be a great business. And the royalty will be substantial. I am willing to pay a fair amount of the royalty to the UA. Provided that UA helps me in the coming few months to 1) make a powerful patent 2) contact with related industries and make a good contract.

I will send you a separate email to give you more information about my memory device and other scientific discoveries I have achieved.

Best Regards,

Ali

[Quoted text hidden]

Destruction of the scientific data

Inbox x



Ali Amiri <aamiri1@crimson.ua.edu>

6/17/17



to president Takao, Patrick

President Bell,

Yesterday, somebody entered into the CVD lab in the MINT center, and have manipulated my research samples. Currently, I am the only user of this lab. The intruder has opened the desiccator which I am keeping the samples. There was a sign with the warning "Please Don't Touch!" the intruder has removed the sign and have made changes in the samples. Then he left the lab and the door was open.

I have 5 desiccators in this lab. I usually share 3 desiccators with other students who occasionally use the lab. But 2 of these desiccators are used only for my samples. I put the warning sign only on one of them, which I am keeping the most valuable samples I have made in the past four years. This desiccator was opened yesterday.

I have reported a similar incident to the chair of the physics department, Dr. LeClair, on the April 25th. In that incident, I entered the lab at the right time, and no damage was done to the samples. That time, Dr. LeClair assured me that my research samples will not be damaged.

Please take immediate action to save my samples.

These samples are the proof of my great scientific achievements. Such achievements are unprecedented in the UA.

Please save these samples.

Thank you,
Ali Amiri

president <president@ua.edu>

6/19/17



to me

Dear Ali:

I have forwarded your email to Provost Whitaker and Vice President Carl Pinkert.

Thank you.

Stuart R. Bell
President

Office of the President
The University of Alabama
Box 870100, Tuscaloosa, AL 35487
office 205-348-5100
president@ua.edu



THE UNIVERSITY OF
ALABAMA



Ali Amiri <aamiri1@crimson.ua.edu>

Plagiarism

Pinkert, Carl <cap@ua.edu>

Fri, Jun 23, 2017 at 2:16 PM

To: Ali Amiri <aamiri1@crimson.ua.edu>

Cc: "Carpantato Myles (cmyle@research.ua.edu)" <cmyle@research.ua.edu>

Ali,

As I outlined to you earlier, there is a formal process. The process was again underway as promised, per my earlier correspondence with you, following your message of June 21 (with 3 attachments) that are still under review internally. With this morning's first message (with 8 attachments), the second message (with an audio file), and this afternoon message – it is not a 5 minute determination. You will have a formal update from me regarding research misconduct sometime next week.

Sincerely,

Dr. C.A. Pinkert | Vice President

Research and Economic Development
The University of Alabama
cap@ua.edu | <https://www.ua.edu/research/>



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Any review, transmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from your computer.

From: Ali Amiri [mailto:aamiri1@crimson.ua.edu]**Sent:** Friday, June 23, 2017 2:00 PM**To:** Pinkert, Carl <cap@ua.edu>**Cc:** president <president@ua.edu>; Whitaker, Kevin <kwhitaker@ua.edu>; T Suzuki <takaosuzuki@mint.ua.edu>; William Butler <wbutler@mint.ua.edu>**Subject:** Re: Plagiarism

[Quoted text hidden]

(35)



Graduate School
Office of the Dean

June 29, 2017

Ali Amiri
1001 14th Street, #24E
Tuscaloosa, AL 35401

Dear Mr. Amiri:

The Graduate School received notification from the Department of Physics that you have been dismissed from the Doctor of Science in Physics program. As per Scholastic Requirements of the Graduate Catalog, departmental dismissal from a degree program also results in suspension from the Graduate School.

As a result, you will not be permitted to register for the Fall 2017 or any future semester unless you have first been readmitted to the Graduate School, in a different program. The process for readmission is described in the Graduate Catalog online in <https://catalog.ua.edu/graduate/about/academic-policies/scholastic-requirements/>.

I wish you the best in all of your future endeavors.

Regards,

A handwritten signature in cursive script that reads "Susan Carvalho".

Susan Carvalho
Associate Provost and Dean of the Graduate School

cc: Chemistry
11272715



Ali Amiri <aamiri1@crimson.ua.edu>

Documents Regard My Ownership

Ali Amiri <aamiri1@crimson.ua.edu>
To: president@ua.edu

Thu, Jun 1, 2017 at 7:15 AM

Dear President Stuart R. Bell,

My name is Ali Amiri, and I am a graduate student in the physics department. I am writing this email to you with regard to the documents confirming my ownership of my intellectual property for a memory device. Based on the university patent law (Appendix G- Section 4) you have the authority to sign my ownership documents.

Here I am going to give you a brief description of my research in UA and my scientific and technological discoveries. I began my PhD in UA in august 2011, and I began my dissertation research under direction of Dr. Arunava Gupta from spring 2013. In more than four years of research I have been working on five different topics as follows:

Topic 1 (spring 2013 to spring 2015) - 2 years:

Growing VO₂ films on PMN-PT substrate and studying strain effect.

Topic 2 (summer 2015 and fall 2015) – 8 months:

Growing epitaxial VO₂ films on TiO₂ substrate and applying strain by bending bilayers of PMN-PT/TiO₂.

Topic 3 (spring 2016 and summer 2016) -8 months:

Growing bilayers of CrO₂/VO₂ and studying the magnetic properties.

Topic 4 (fall 2016) – 8 months

Growing trilayers of Ru/VO₂/Ru for tunneling spectroscopy studies.

Topic 5 (spring 2017 to now) - 6 months

Growing bilayers of VO₂/Ni and studying proximity effects.

I have been very successful in all of these subjects, and I have reported the results every week both in group meetings and individual meetings.

My memory device is not the outcome of any of these researches.

I have got the idea for this memory device in spring 2014. And I asked my adviser, Dr. Gupta, to let me do some research on this subject. But he strongly rejected the idea. (And even he made fun of it – he has the same attitude regard this device up to today. He thinks the idea is impossible and absurd).

In the past three years, I have continued thinking about this device. In my extra time on weekends, I have done calculations and basic studies in this regard.

In spite of my frequent requests, no substrate or other materials have been supplied for this research. A few times, I have convinced my co-adviser to buy few substrates for this research. But finally it was not approved, which was very disappointing. Also, I did not get permission to use any facilities for this research, which was very frustrating for me.

Now, I want to move forward, and get this device to the industry. I will make a contract with the industry and will do essential experiments and studies using their resources. So, I need my ownership documents to be able to patent my device and sell it to the industry.

Could you please confirm my ownership of my memory device in a written document and sign it? I need to patent this device and sell it to industry by the end of this summer. I would be very grateful to get my ownership document as soon as possible. Since this is a highly competitive industry, I am afraid somebody else will patent it before me.

I have discussed the industrialization process with OTT and specifically with Dr. Rick Swatloski. As soon as I get my ownership documents, I will begin the industrialization process.

Best Regards,
Ali Amiri



Ali Amiri <aamiri1@crimson.ua.edu>

Documents Regard My Ownership

president <president@ua.edu>
To: Ali Amiri <aamiri1@crimson.ua.edu>

Tue, Jun 6, 2017 at 1:13 PM

Dear Ali:

Your email does not include enough information for me to make an informed judgment regarding ownership of the memory device invention. Before the University can determine ownership of that invention you will need to provide adequate documentation to the Office of Technology Transfer. Please contact Rick Swatloski to begin that process.

Stuart R. Bell

President

Office of the President
The University of Alabama
Box 870100, Tuscaloosa, AL 35487
office 205-348-5100
president@ua.edu



From: Ali Amiri [mailto:aamiri1@crimson.ua.edu]
Sent: Monday, June 05, 2017 2:22 PM
To: president <president@ua.edu>
Subject: Re: Documents Regard My Ownership

[Quoted text hidden]



Ali Amiri <aamiri1@crimson.ua.edu>

Documents Regard My Ownership

Ali Amiri <aamiri1@crimson.ua.edu>
To: president <president@ua.edu>

Wed, Jun 7, 2017 at 1:27 PM

Dear Dr. Bell,

I think my email was a long email, and I have tried to convey as much as information as possible. But I would expect that you get information from your administration staff as well. The people you may contact are:

- 1) Vice President Dr. Pinkert: I was communicating with Dr. Pinkert for the past two months. He is investigating a report of academic misconduct for Dr. Arunava Gupta as well. Unfortunately, he refused to meet me in person. And his misconduct investigation has been unsatisfactory.
- 2) Dean of Art and Science, Dr. Olin: He did not answer my emails. But he has received the reports, at least, for the past one year. I meet and talk with Associate Dean Dr. Han on Oct. 2016.
- 3) Office of Technology Transfer: I have been in contact with OTT for the past six months. And I have had meetings with Dr. Rick Swatloski and Dr. Whitney Hough several times.
- 4) Chair of The Physics Department, Dr. LeClair: He is in my dissertation committee. We have had weekly meetings for the past three years. Dr. LeClair has the most comprehensive information about my research.
- 5) My adviser, Dr. Arunava Gupta: He strongly rejected my idea for a memory device, and he did not let me use any facilities of the UA for this research. He also did not let us to buy any material for this research.

You gave the Burnum Award in 2016 to Dr. Gupta. You may call him and ask his opinion about this device. This will give you the most useful information to determine the ownership of this memory device. Because he still makes fun of my idea for my memory device, and he has banned my access to all labs for the past two months. (He is the associate director of MINT center).

Dr. Gupta has plagiarized many scientific works of mine. Two of those scientific works are very important discoveries. He published them with the wrong theory without my name on them! I will publish those discoveries with the right scientific theory myself and they will change the future of science in the surrounding areas.

Best Regards,
Ali

[Quoted text hidden]



George P. Kobler
Registered Patent Attorney

256.679.3174

GKobler@KoblerIP.com

KoblerIP, LLC
Intellectual Property Law
P.O. Box 18186
Huntsville, AL 35804

July 11, 2017

VIA U.S. MAIL & EMAIL (president@ua.edu)

Dr. Stuart R. Bell
President, University of Alabama
801 University Boulevard
Rose Administration Building Suite 203
Tuscaloosa, Alabama 35401

RE: Ali Amiri – Disclaimer of Ownership in Research Work

Dear Dr. Bell:

I represent Mr. Ali Amiri, a PhD candidate in the Department of Physics and Astronomy. The reason for this letter is to request that the University of Alabama expressly disclaim ownership of certain work conducted by Mr. Amiri in preparation for his PhD program.

The relevant facts are as follows. February 2015, Mr. Amiri submitted a proposed research plan to his dissertation committee which included, among other topics, a proposal to do an experiment to develop a memory device based on VO₂ films. A copy of Amiri's proposal is enclosed and the relevant portion of the proposal is found on page 22. Mr. Amiri has successfully defended his research plan on March 6th, 2015.

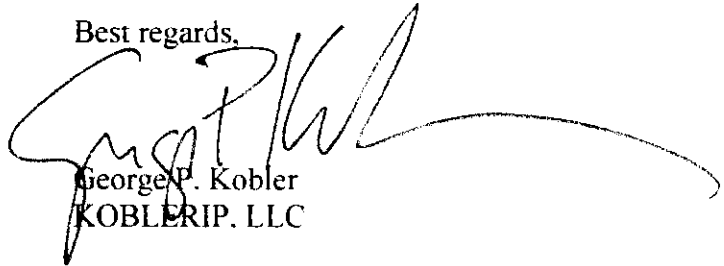
Mr. Amiri has been in contact with the Office for Technology Transfer ("OTT") for more than 6 months starting from January 2017, to discuss possible protection of his idea through the University of Alabama. But his advisors did not agree to undergo the formal disclosure process in accordance with the University's Patent Policy. Furthermore, the University of Alabama did not permit Mr. Amiri to conduct experiments to develop such a memory device since its proposal in February 2015.

I have enclosed a simple disclaimer form I request you sign indicating the University's disclaimer of ownership in Mr. Amiri's concept for a VO₂-based memory device. Please return the signed document to me at the address above.

President Dr. Stuart R. Bell
The University of Alabama
July 11, 2017

Thank you in advance for your attention to this matter. If you need further information, please feel free to contact me by email or by phone.

Best regards,

A handwritten signature in black ink, appearing to read "George P. Kobler", with a long horizontal flourish extending to the right.

George P. Kobler
KOBLERIP, LLC

Enclosures

cc: Dr. Richard Swatloski (via email richard.swatloski@ua.edu)

The UA Triage Assessment have evaluated the market. This computer technology is not only a replacement for the current memory devices, so the actual values will be much greater.



Market

- **Memory Management Unit Manufacturers**
 - Revenue: \$574M | CAGR: 5.6%
- **Microcontroller Manufacturing**
 - Revenue: \$610.5M | CAGR: 5.6%
- **Non-Volatile Memory Application**
 - Revenue: \$21.6M | CAGR: 60%
- **Circuit Elements with Memory**
 - Revenue: \$529.6M | CAGR: 67.8%
- Explosive growth with increased demand for for efficient and expansive memory systems

ALABAMA

Office for Foreign Transfer



Potential Customers

- Hewlett-Packard – Revenue: \$18bn
 - Cadence Design Systems – Revenue: \$2bn
 - Texas Instruments – Revenue: \$13.37bn
 - Fujitsu Semiconductor – Revenue: \$22.51M
 - **Western Digital Corp. – Revenue: \$12.99bn**
 - **Toshiba Corp. – Revenue: \$54.65bn**
 - **Crossbar Inc. – Revenue: \$3.28M**
 - HGST Inc. – Revenue: \$958M
- Investing in Non-Volatile Storage Equipment

ALABAMA

Office for Foreign Transfer

To the Director of FBI

Dear Mr. Christopher A. Wray,

In the past three years, I have discovered and introduced a new computer technology called PzRAM. This is the next generation computer technology and will replace the current technologies. The economic value of this technology will exceed a few trillion dollars in the next five years. I have discovered and developed this technology, and I have the ownership documents. I want to establish this technology in the United States of America.

There is an underground network, which is trying to steal and transfer this technology to another place. On April 2017 I reported a data leakage to the President of the University of Alabama. My research data were systematically transmitted by Dr. Arunava Gupta (from UA) to a Chinese professor Dr. Nian Sun in the Northeastern University.

In early September 2017, I filed two patents before the USPTO to get legal protection for this technology. (Application numbers: 62556065, and 62559608). But Dr. Gupta broke into my office, broke my personal locker and stole the content of the patents. The stolen items include 8 notebooks, 2 flash memories, and also the notes and sketches of the various designs of the PzRAM. The incident was immediately reported to the FBI, and on October 4th, I met Mr. Josh Alford in Birmingham, Alabama headquarter. And I submitted full documentation in 23 pages printed. I request that the FBI should send officers to the UA to discover and return the stolen items. And also identify the members of the illegal technology transfer group.

Unfortunately, no action was taken by the FBI as of yet. On October 26th, the Chinese professor Dr. Nian Sun visited the UA for a review session. This happens about one month after the content of the patents were stolen. Dr. Arunava Gupta and Dr. Nian Sun both are in the US as of today.

My request from you is that: Please give a special order to investigate the illegal technology transfer. This is a giant and cutting-edge technology, which will create tens of thousands of high-tech jobs as well as huge amounts of wealth in the US. If this technology gets transferred, many US companies will go bankrupt in the next few years. The country which has this technology will lead the world, both economically and technologically.

The FBI should provide me with an official answer for my report.

Best Regards,

Ali Amiri

November 2, 2017